



## **RECOMMENDED PILOT STUDIES**

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### **Recommendation by Montgomery County Context Sensitive Road Design Stakeholder Working Group to County Executive for Pilot Studies to Refine Stormwater Standard**

**In addition to the Stormwater Standard, it is recommended that the Montgomery County Executive and Council direct agencies to conduct pilot testing and cooperative monitoring projects to resolve outstanding issues related to stormwater that are not addressed in the Stormwater Standard. Some recommended study areas include:**

#### **Vegetated Integrated Management Practice (V-IMP) PILOT STUDY TESTING FOR WATER QUANTITY BENEFITS FROM WATER QUALITY MEASURES:**

Montgomery County should conduct research and lead coordinated scientific and engineering partnerships to monitor existing V-IMP's and to develop proposed V-IMP measures in roadway projects. The purpose of the monitoring will be to determine the stormwater discharge benefits from V-IMP measures. This will include evaluating the stormwater benefits of street trees as an element of V-IMP's and the impacts of stormwater runoff on the growth and survival of street trees. Street trees are defined as those species approved for use by Montgomery County. Approved measures should be incorporated into the Montgomery County Chapter 19, Article 2. The pilot testing could be structured as follows :

1. DEP should establish and participate in a committee comprised of representatives of science and engineering communities.
2. The committee should research existing projects throughout the country, where conditions are similar to those in Montgomery County, that have sought to uncover the discharge benefits from water quality measures.
3. The committee should establish appropriate instrumentation and monitoring methods to ascertain the effectiveness of V-IMP's tested by the pilot roadway projects and to evaluate the stormwater benefits from street trees and stormwater impacts on the growth and survival of street trees associated with these pilot roadway projects.
4. Begin monitoring and charting selected facilities according to the following minimum basic criteria:
  - i. Monitored water inflow where possible – or - Rainfall depth and duration by calibrated rain gages
  - ii. Monitored water outflow
  - iii. Computed overall inflow and outflow hydrographs
  - iv. Growth and survival of street trees associated with the projects where V-IMP measures have been implemented.
  - v. Growth and survival of other vegetation associated with the projects where V-IMP measures have been implemented.
  - vi. Monitored changes in soil conditions and differences between study sites.
  - vii. Estimate stormwater runoff reductions and other associated benefits of street trees and other vegetation associated with the projects where V-IMP measures have been implemented.



5. Identify life-cycle costs to public and private sectors for implementation, maintenance and replacement
6. Establish a V-IMP Pilot Study web page to post the latest raw data, no less than every 3 months, to ensure community awareness and to identify successes and failures based on readings from the monitoring systems.
7. Maintain and administer this V-IMP pilot testing program for at least two years, and consider at the end of that time if the data are useful and conclusive or if an additional study period is warranted. .
8. Within a technical sub-committee, work with the scientific and engineering community to quantify applied metrics and conceptual modifications into design standards resulting from this pilot testing program.
9. The committee shall prepare a summary report on maintenance logistics and difficulties for all the facilities involved in the pilot studies.
10. Submit proposed changes for the Montgomery County Stormwater Code to MDE for approval. After MDE has approved the proposed changes, Montgomery County shall adopt the approved proposals into the Stormwater Code.

**STREAM CHANNEL STABILITY PILOT STUDY  
FOR ESTABLISHING FLUVIAL GEOMORPHIC MITIGATIONS FOR  
INADEQUATE STORMWATER OUTFALLS**

A Technical Committee shall be established that will select roadway projects in Montgomery County and complete a written technical report on the existing conditions of natural stream channels ultimately receiving runoff from the project. This is not to be part of any permitting process, but a task designed to assess watershed impacts from road projects under current outfall requirements. Data retrieved from this study may be used to improve future regulations affecting watershed stability. The following would be components of pilot study documentation that would be cataloged by the County:

1. Establishing the Extent of Review for each storm water outfall at the project's discharge confluences with natural stream channels, recommended to be 100 times the contributing drainage area of the roadway to the outfall point. If the area of the total stream watershed at this piped discharge confluence with the natural stream channel is less than 100 times the contributing site area, establish the point downstream where the total watershed area is 100 times the contributing site area. This location shall be the Extent of Review.
2. Document and assess by field observations the fluvial geomorphologic condition of the natural stream channel at the Extent of Review.
3. Record the stormwater treatment associated with the road project.
4. Establish a regular schedule of observation of the chosen outfall points.
5. Annually report on the state of monitored outfalls for the purpose of evaluating overall watershed conditions and prioritizing stream restoration projects.